*Quiz: Photoelectric Effect* **Physics 12** Name: _____

_____ 1. What is the term used to refer to the minimum energy required for a photoelectron to escape from a metal plate in a photocell?

A. stopping voltage

B. Planck's constant

C. threshold wavelength

D. work function

_____ 2. Threshold frequency is to work function as hertz is to which one of the following?

A. coulomb

B. joule

C. newton

D. watt

_____ 3. The variable that varies directly with the amount of current produced by photoelectrons

A. the intensity of the incident light

B. the frequency of the incident light

C. the wavelength of the incident light

D. the work function of the metal surface

_____ 4. The threshold frequency has a value of X. If the frequency of the incident light increases from 2X to 4X, then the resulting current of photoelectrons

A. is doubled

B. is increased by a factor or 3

C. reduced by half

D. remains the same

_____ 5. When electromagnetic radiation with a wavelength of 350 nm falls on a metal, the maximum kinetic energy of the ejected electrons is 1.20 eV. What is the work function of the metal?

A. 1.3 eV

B. 2.4 eV

C. 5.4 eV

D. 5.7 eV

_____ 6. Calculate the wavelength of a photon with $3.2 \times 10^{-19}$ J of energy.

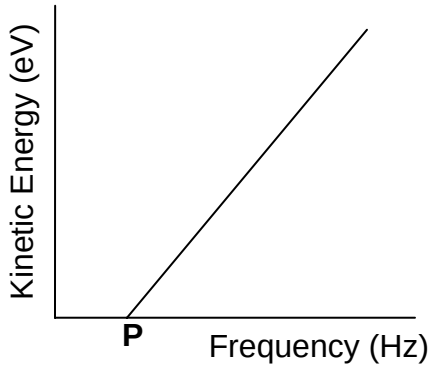
A. 210 nm

B. 420 nm

C. 530 nm

D. 620 nm

_____ 7. The graph below shows the relationship between the frequency of radiation incident on a photosensitive surface and the maximum kinetic energy of the emitted photoelectrons.




What does point **P** represent?

A. fundamental frequency

B. photoelectron frequency

C. photon escape frequency

D. threshold frequency

_____ 8. The work function of a particular photo-emissive material is 4.0 eV. If photons with 16 eV of energy are incident on the material, what would be the maximum kinetic energy of the ejected photoelectrons?

A. 0.25 eV

B. 4.0 eV

C. 12 eV

D. 20. eV